

Application No.: 10/064,808

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**REMARKS**

This response, submitted in response to the final Office Action dated November 25 2005, is believed to be fully responsive to the points of rejection raised therein. Accordingly, favorable reconsideration on the merits is respectfully requested. Turning to the claims, Claims 1-31, 40 and 41 are pending. Claims 32-39 were previously cancelled.

Claims 1-4, 9, 12, 13, 21-23, 25 40 and 41 have been rejected under 35 USC 103(a) over JP 10-255827, in view of US patent No. 5,688,610 (Spaeh). Claims 5 and 6 have been rejected under 35 USC 103(a) over JP 10-255827, in view of Spaeh, in further view of JP7-249419. Claims 7 and 8 have been rejected under 35 USC 103(a) over JP 10-255827, in view of Spaeh, in further view of JP7-249419, and in still further view of "Applicant's admitted prior art." Claims 14 and 15 have been rejected under 35 USC 103(a) over JP 10-255827, in view of Spaeh, and in further view of EP0374368. Claim 16 has been rejected under 35 USC 103(a) over JP 10-255827, in view of Spaeh, and in further view of U.S. Patent No. 4,859,545 (Scheffler). Claims 17, 19 and 20 have been rejected under 35 USC 103(a) over JP 10-255827, in view of Spaeh, and in further view of "Applicant's admitted prior art." Claim 18 has been rejected under 35 USC 103(a) over JP 10-255827, in view of Spaeh, in further view of "Applicant's admitted prior art," and in still further view of EP0374368. Claims 26, 27, 30 and 31 have been rejected under 35 USC 103(a) over JP 10-255827, in view of Spaeh, in further view of "Applicant's admitted prior art," in still further view of EP 0374368. Claims 28 and 29 have been rejected under 35 USC 103(a) over JP 10-255827, Spaeh, "Applicant's admitted prior art," EP 0347368, and JP9-223512. Claims 10, 11 and 24 have been rejected under 35 USC 103(a) over JP 10-255827, in view of Spaeh, and in further view of Gillett.

Applicant respectfully submits the following remarks in support of the patentability of the claims.

1. **Claims 1-4, 9, 12, 13, 21-23, 25, 40 and 41:**

Claims 1-4, 9, 12, 13, 21-23, 25, 40 and 41 stand rejected under 35 USC 103(a) over JP 10-255827, in view of Spaeh.

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a. *Claims 1-4, 9, 12 and 13:* Claim 1 is directed to a fuel cell assembly that includes a housing having an inlet and an outlet and defining at least one bypass flow channel. The bypass flow channel is configured to be in fluid communication with the inlet, and the inlet and outlet are configured to provide fluid communication to and from the housing, respectively. The fuel cell assembly further includes at least one fuel cell stack disposed within the housing and defining at least one direct flow channel. The fuel cell stack has at least one fuel cell, and the direct flow channel is configured to be in fluid communication with the inlet and outlet. The fuel cell assembly further includes a control system, which is configured to control an oxidant flow from the inlet to the direct and bypass flow channels.

Based on Applicant's understanding of the English language abstract and figures, JP 10-255827 employs a bypass control device 5 to stop power generation in a fuel cell for which an abnormality is detected. This is accomplished by controlling a bypass valve 8 so as to secure a passage of fuel gas by cooperating with cutoff operation of a fuel gas flow of a fuel cell on which abnormality is caused (Abstract) and by controlling an oxidizing gas bypass valve 9 to secure a passage of oxidizing gas by cooperating with a cutoff operation of an oxidizing gas flow control valve 7 (Abstract).

As noted on page 5 of the Office Action, JP 10-255827 does not disclose a housing defining at least one bypass channel, as recited by Claim 1. Applicant further notes that the Examiner has pointed to no teaching in JP 10-255827 of at least one direct flow channel that is defined by at least one fuel cell stack, where the direct flow channel is configured to be in fluid communication with an inlet and outlet of a housing, as recited by Claim 1. Based on Applicant's review of the English language abstract and figures, JP 10-255827 also fails to disclose this recitation of Claim 1.

Spaeh is cited to supply the former deficiency of JP 10-255827. Spaeh is directed to a device for generating energy. For the arrangement of Spaeh, supply air is guided by means of a housing that is common to a plurality of fuel cell stacks and is not connected directly to the fuel cell stacks (Col. 1, lines 59-61). Applicant agrees that Spaeh discloses a housing with an inlet and an outlet. However, Applicant respectfully submits

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that Spaeh teaches away from several of the recitations of Claim 1. For example, Spaeh teaches away from the use of a direct flow channel configured to be in flow communication with the inlet and outlet, as recited by Claim 1. Instead, Spaeh teaches that the supply air is freely guided to the fuel cell stacks within the enclosure (Abstract, FIG. 1). Moreover, Spaeh also teaches away from the claimed control system, which is configured to control an oxidant flow from the inlet to the direct and bypass flow channels. Namely, Spaeh teaches that the supply air is freely guided to the fuel cell stacks (Abstract). The instant invention can not be arrived at by merely combining the teachings of Spaeh and JP 10-255827.

Further, the combination suggested by the Examiner appears to ignore the purpose of JP 10-255827, namely to stop power generation in a fuel cell for which an abnormality is detected. For example, it is not clear to Applicant whether replacing the oxidizing gas bypass valve 9 of JP 10-255827 with the guiding of supply air to the fuel cell stacks within the enclosure of Spaeh would render the resulting combination unsuitable for the purpose of JP 10-255827, namely stopping power generation in a fuel cell for which an abnormality is detected. Accordingly, Applicant respectfully submits that one skilled in the art would not modify JP 10-255827 in the manner suggested by the Examiner, as the proposed modification might render the system unsuitable for the intended purpose of JP 10-255827.

In addition, Applicant respectfully submits that even if one skilled in the art were motivated to combine the two references in the manner suggested by the Examiner, the Examiner has pointed to no teaching in the cited art suggesting that the resulting combination would include at least one direct flow channel that is defined by at least one fuel cell stack, where the direct flow channel is configured to be in fluid communication with an inlet and outlet of a housing, as recited by Claim 1.

In view of the above, Applicant respectfully submits that Claim 1 is patentably distinguishable over JP 10-255827 and Spaeh, either alone or in combination. Further, as Claims 2-4, 9, 12 and 13 depend from Claim 1, these claims are also patentably distinguishable over the cited art for at least the reasons presented above with respect to

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Claim 1. Accordingly, Applicant respectfully requests that the rejections of Claims 1-4, 9, 12 and 13 under 35 USC 103(a) over JP 10-255827 and Spaeh be withdrawn.

b. *Claims 21-23, 25:* Similarly, independent Claim 21 is directed to a fuel cell assembly that includes in part a housing having an inlet and an outlet, where the inlet and outlet are configured to provide fluid communication to and from the housing, respectively. The fuel cell assembly further includes at least one bypass flow duct extending along the housing and configured to be in fluid communication with the inlet. The fuel cell assembly further includes at least one fuel cell stack disposed within the housing and defining at least one direct flow channel configured to be in fluid communication with the inlet and outlet.

As noted on page 8 of the Office Action, JP 10-255827 does not disclose a bypass flow duct extending along a housing, as recited by Claim 21. Spaeh is cited to supply this deficiency of JP 10-255827. However, Spaeh does not disclose a bypass duct extending along a housing, as recited by Claim 21. Rather, in Spaeh, supply air is guided freely by means of a housing (Col. 1, lines 59-61).

Moreover, Applicant respectfully submits that the Examiner has pointed to no teaching in JP 10-255827 of at least one direct flow channel defined by the at least one fuel cell stack and configured to be in fluid communication with the inlet and outlet, as recited by Claim 21. Further, Applicant submits that Spaeh teaches away from a direct flow channel defined by the at least one fuel cell stack, in that Spaeh teaches that the supply air should be guided freely by means of a housing (Abstract, FIG. 1). In addition, Applicant submits that one skilled in the art would not modify JP 10-255827 in the manner suggested by the Examiner, given that the proposed modification might render JP 10-255827 unsuitable for its stated purpose, namely to stop power generation in a fuel cell for which an abnormality is detected.

In view of the above, Applicant respectfully submits that Claim 21 is patentably distinguishable over JP 10-255827 and Spaeh, either alone or in combination. Further, as Claims 22, 23 and 25 depend from Claim 21, these claims are also patentably distinguishable over the cited art for at least the reasons presented above with respect to

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Claim 21. Accordingly, Applicant respectfully requests that the rejections of Claims 21, 22, 23 and 25 under 35 USC 103(a) over JP 10-255827 and Spaeh be withdrawn.

c. *Claims 40 and 41:* Claim 40 is directed to a fuel cell assembly that includes, in part, a housing having an inlet and an outlet and defining at least one bypass flow channel, which is configured to be in fluid communication with the inlet and the outlet, where the inlet and outlet are configured to provide fluid communication to and from the housing, respectively. The fuel cell assembly further includes at least one fuel cell stack disposed within the housing and defining at least one direct flow channel configured to be in fluid communication with the inlet and outlet.

As noted on page 8 of the Office Action, JP 10-255827 does not disclose a bypass flow channel defined by a housing, as recited by Claim 40. Spaeh is cited to supply this deficiency of JP 10-255827. However, Spaeh does not disclose a bypass flow channel defined by a housing, as recited by Claim 40. Rather, in Spaeh, supply air is guided freely by means of a housing that is common to a plurality of fuel cell stacks and is not connected directly to the fuel cell stacks (Col. 1, lines 59-61).

In addition, Applicant respectfully submits that the Examiner has pointed to no teaching in JP 10-255827 of at least one direct flow channel defined by at least one fuel cell stack and configured to be in fluid communication with the inlet and outlet, as recited by Claim 40. Further, Applicant submits that Spaeh teaches away from a direct flow channel defined by at least one fuel cell stack, in that Spaeh teaches that the supply air should be guided freely by means of a housing (Abstract, FIG. 1). Moreover, Applicant submits that one skilled in the art would not modify JP 10-255827 in the manner suggested by the Examiner, given that the proposed modification might render JP 10-255827 unsuitable for its stated purpose, namely to stop power generation in a fuel cell for which an abnormality is detected.

In view of the above, Applicant respectfully submits that Claim 40 is patentably distinguishable over JP 10-255827 and Spaeh, either alone or in combination. Further, as Claim 41 depends from Claim 40, these reasons apply to claim 41, as well. Accordingly, Applicant respectfully requests that the rejections of Claims 40 and 41 under 35 USC 103(a) over JP 10-255827 and Spaeh be withdrawn.

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**2. Claims 5 and 6:**

Claims 5 and 6 stand rejected under 35 USC 103(a) over JP 10-255827, in view of Spaeh, in further view of JP 249419. Claim 5 depends from Claim 1 and further recites that the control sensor is configured to monitor a parameter selected from the group consisting of temperature, voltage, electrical current, and heat flux. Claim 6 depends from Claim 5 and further recites that the control sensor comprises a temperature sensor. Applicant submits that the arguments presented above with respect to Claim 1 apply with equal force to dependent Claims 5 and 6.

On page 10 of the Office Action, the Examiner indicates that the English language abstract of JP 10-255827 does not disclose a control sensor configured to monitor a parameter selected from the group consisting of temperature, voltage, electrical current, and heat flux, as recited by Claim 5. JP 249419 is thus cited to supply the specific recitations of dependent Claims 5 and 6.

JP 249419 is directed to a fuel cell. When the temperature abnormally rises, the flow quantity control valve 69 arranged in the oxidant gas flow passage 6 is opened to increase the quantity of the oxidant gas. (Abstract) Although JP 249419 discusses a bypass slot 62 (see for example paragraphs 29-30 and 61), as described with respect to FIG. 7, the bypass slot 62 appears to be formed within the fuel cell. Accordingly, Applicant submits that JP 249419 does not supply the above stated deficiencies of JP 10-255827 and Spaeh.

For at least these reasons, Applicant respectfully submits that Claims 5 and 6 are patentably distinguishable from the cited art, either alone or in combination. Accordingly, Applicant requests that the rejections of Claims 5 and 6 under 35 USC 103(a) be withdrawn.

**3. Claims 7 and 8:**

Claims 7 and 8 stand rejected under 35 USC 103(a) over JP 10-255827, in view of Spaeh, in further view of JP7-249419, and in still further view of "Applicant's admitted prior art." Claim 7 depends from Claim 1 and further recites that the control sensor comprises an invasive temperature sensor, which is in intimate contact with a downstream control point. Similarly, Claim 8 depends from Claim 1 and further recites

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that the control sensor comprises a non-invasive temperature sensor, which is in remote communication with an upstream control point.

The reasons presented above with respect to Claims 1, 5 and 6 apply to Claims 7 and 8, as well. "Applicant's admitted prior art" does not supply the above- discussed deficiencies of 10-255827, Spaeh and JP7-249419,

In addition, Applicant wishes to address the remarks made on page 10 of the Office Action. Paragraph 25 of the present application explains that both invasive and non-invasive temperature sensors are known. However, Paragraph 25 does not suggest that the claimed use of such sensors is known. Accordingly, Applicant respectfully submits that the Examiner has not pointed to any specific teaching in the art to employ an invasive temperature sensor, which is in intimate contact with a downstream control point (Claim 7). Nor, has the Examiner pointed to any specific teaching in the art to employ a non-invasive temperature sensor, which is in remote communication with an upstream control point (Claim 8).

Accordingly, Applicant respectfully submits that Claims 7 and 8 are patentably distinguishable from the cited art, either alone or in combination. Accordingly, Applicant requests that the rejections of Claims 7 and 8 under 35 USC 103(a) be withdrawn.

**4. Claims 14 and 15:**

Claims 14 and 15 stand rejected under 35 USC 103(a) over JP 10-255827, in view of Spaeh, and in further view of EP0374368. Claims 14 and 15 depend from Claim 1. Claim 14 further recites that the housing is configured to be pressurized, and the inlet is configured to be in fluid communication with a preceding outlet of a turbine engine. Claim 15 further recites that the housing is configured to be pressurized, and the outlet is configured to be in fluid communication with a subsequent inlet of a turbine engine.

Applicant submits that the arguments presented above with respect to Claim 1 apply with equal force to dependent Claims 14 and 15.

The Examiner cites EP0374368 to supply the additional recitations of Claims 14 and 15. However, EP0374368 does not supply the above-described deficiencies of JP 10-255827 and Spaeh. In particular, although the Figure of EP0374368 shows flow of purge air around fuel cell stack 8, the air flow from compressor 10 is separate, and

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EP0374368 does not teach a control system, which is configured to control an oxidant flow from an inlet to direct and bypass flow channels, as is recited by Claim 1.

For at least these reasons, Applicant respectfully submits that Claims 14 and 15 are patentably distinguishable from the cited art, either alone or in combination. Accordingly, Applicant requests that the rejections of Claims 14 and 15 under 35 USC 103(a) be withdrawn.

**5. Claim 16:**

Claim 16 has been rejected under 35 USC 103(a) over JP 10-255827, in view of Spaeh, and in further view of Scheffler. Claim 16 depends from Claim 1 and further recites that the bypass flow channel is configured to recycle at least a portion of the oxidant flow through the bypass flow channel to the inlet. As noted by the Examiner, JP 10-255827 and Spaeh do not teach or suggest a bypass flow channel, which is configured to recycle at least a portion of the oxidant flow through the bypass flow channel to the inlet, as recited by Claim 16. Scheffler is cited to supply this deficiency of JP 10-255827.

Scheffler is directed to cathode flow control for a fuel cell power plant. Scheffler employs a cathode exhaust recirculating loop 24 for recirculating cathode exhaust. In contrast, the claimed bypass flow channel recycles at least a portion of the oxidant flow through the bypass flow channel to the inlet.

Applicant respectfully submits that Scheffler neither supplies the deficiencies of JP 10-255827 and Spaeh discussed above with respect to claim 1 nor discloses the additional recitation of Claim 16. For at least these reasons, Applicant respectfully submits that Claim 16 is patentably distinguishable from the cited art, either alone or in combination. Accordingly, Applicant requests that the rejection of Claim 16 under 35 USC 103(a) be withdrawn.

**6. Claims 17, 19 and 20:**

Claims 17, 19 and 20 stand rejected under 35 USC 103(a) over JP 10-255827, in view of Spaeh, and in further view of "Applicant's admitted prior art." Claims 17, 19 and 20 depend from Claim 1. Accordingly, the reasons presented above with respect to Claim 1 apply with equal force to these claims. Accordingly, Applicant respectfully



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submits that Claims 17, 19 and 20 are patentably distinguishable over the cited art. Accordingly, Applicant requests that the rejections of Claims 17, 19 and 20 under 35 USC 103(a) be withdrawn.

7. **Claim 18:**

Claim 18 stands rejected under 35 USC 103(a) over JP 10-255827, in view of Spaeh, in further view of "Applicant's admitted prior art," and in still further view of EP0374368. Claim 18 depends from Claim 1. The reasons presented above with respect to Claim 1 apply with equal force to Claim 18. Further, as discussed above with respect to Claims 14 and 15, EP0374368 does not supply the deficiencies of JP 10-255827 and Spaeh with respect to Claim 1, nor does "Applicant's admitted prior art." Accordingly, Applicant respectfully submits that Claim 18 is patentably distinguishable over the cited art, either alone or in combination. Accordingly, Applicant requests that the rejection of Claims 18 under 35 USC 103(a) be withdrawn.

8. **Claim 26, 27, 30 and 31:**

Claims 26, 27, 30 and 31 stand rejected under 35 USC 103(a) over JP 10-255827, in view of Spaeh, in further view of "Applicant's admitted prior art," in still further view of EP 0374368. Independent Claim 26 is directed to a solid oxide fuel cell assembly including a pressure vessel having an inlet and an outlet and defining at least one bypass flow channel, the bypass flow channel being configured to be in fluid communication with the inlet, and the inlet and outlet being configured to provide fluid communication to and from the pressure vessel respectively. The solid oxide fuel cell assembly further including at least one planar solid oxide fuel cell stack disposed within the pressure vessel and defining at least one direct flow channel, the planar solid oxide fuel cell stack including at least one planar solid oxide fuel cell, and the direct flow channel being configured to be in fluid communication with the inlet and outlet. The solid oxide fuel cell assembly further including a control system, which is configured to adjust an oxidant flow from the inlet to the direct and bypass flow channels in response to a feedback signal.

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For reasons similar to those presented above with respect to claim 1, Applicant submits that JP 10-255827 and Spaeh do not disclose, either alone or in combination, at least one bypass flow channel defined by a pressure vessel having an inlet and an outlet, the bypass flow channel being configured to be in fluid communication with the inlet, as recited by Claim 26. Nor do JP 10-255827 and Spaeh disclose at least one direct flow channel defined by at least one planar solid oxide fuel cell stack and configured to be in fluid communication with the inlet and outlet, as recited by Claim 26.

The Examiner cites "Applicant's admitted prior art" for teachings of specific fuel cell types and this art does not supply the above discussed deficiencies of JP 10-255827 and Spaeh.

On page 14 of the Office Action, the Examiner notes that JP 10-255827 and Spaeh do not disclose a pressure vessel having an inlet and an outlet, and the inlet and outlet being configured to provide fluid communication to and from the pressure vessel respectively, as recited by claim 26. The Examiner cites EP 0374368 to supply this additional deficiency of JP 10-255827 and Spaeh. However, EP 0374368 does not disclose a bypass flow channel defined by a pressure vessel with a control system, which is configured to adjust an oxidant flow from the inlet to the direct and bypass flow channels in response to a feedback signal, as recited by Claim 26. For example, although the Figure of EP0374368 shows flow of purge air around fuel cell stack 8, the air flow from compressor 10 is separate and distinct from the flow of purge air from blower 18. (See Figure.)

For at least these reasons, Applicant respectfully submits that Claim 26 is patentably distinguishable over the cited art, either alone or in combination. Further, as Claims 27, 30 and 31 depend from Claim 26, these claims are also patentably distinguishable over the cited art for at least these reasons. In view of the above, Applicant requests that the rejections of Claims 26, 27, 30 and 31 under 35 USC 103(a) be withdrawn.

**9. Claims 28 and 29:**

Claims 28 and 29 stand rejected under 35 USC 103(a) over JP 10-255827, Spaeh, "Applicant's admitted prior art," EP 0347368, and JP9-223512. Claims 28 and 29 depend

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from Claim 26. The Examiner cites JP9-223512 to supply the temperature sensor recitation of Claim 28. However, JP9-223512 does not supply the above-discussed deficiencies of JP 10-255827, Spaeh, EP 0347368 and Applicant's admitted prior art. Accordingly, Applicant respectfully submits that Claims 28 and 29 are patentably distinguishable over the cited art, either alone or in combination. In view of the above, Applicant requests that the rejections of Claims 28 and 29 under 35 USC 103(a) be withdrawn.

**10. Claims 10, 11 and 24:**

Claims 10, 11 and 24 stand rejected under 35 USC 103(a) over JP 10-255827, in view of Spaeh, and in further view of Gillett. Applicants assumes that "Gillett" refers to US Patent No. 6,764,784.

a. **Claim 10:** Claim 10 depends from Claim 1 and further recites that bypass oxidant flow channel is defined by the fuel cell stack and the housing and extends along an inner surface of the housing. Applicant's arguments with respect to Claim 1 apply with equal force to dependent Claim 10. As noted on page 18 of the Office Action, JP 10-255827 and Spaeh do not disclose a bypass oxidant flow channel that is defined by the fuel cell stack and the housing and extends along an inner surface of the housing, as recited by claim 10. The Examiner cites Gillett as support for this additional deficiency of JP 10-255827 and Spaeh. However, although Gillett discusses ducting generally, Gillett does not disclose a bypass oxidant flow channel that extends along an inner surface of the housing.

b. **Claim 11:** Claim 11 depends from claim 1 and further recites a flow liner disposed within the housing, where the bypass flow channel is disposed between the flow liner and the housing and extends along an inner surface of the housing. Applicant's arguments with respect to Claim 1 apply with equal force to dependent Claim 10. The Examiner cites Gillett as disclosing thermal insulation. However, Gillett does not disclose a bypass flow channel, which is disposed between a flow liner and a housing and which extends along an inner surface of the housing, as recited by Claim 11.

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c. **Claim 24:** Claim 24 depends from Claim 21 and further recites that the bypass flow duct is disposed within the housing. Applicant respectfully submits that Gillett does not disclose a bypass flow duct. Nor does Gillett supply the deficiencies of JP 10-255827 and Spaeh that are discussed above with respect to Claim 21.

In view of the above, Applicant respectfully submits that Claims 10, 11 and 24 are patentably distinguishable over the cited art, either alone or in combination. Accordingly, Applicant requests that the rejections of Claims 10, 11 and 24 under 35 USC 103(a) be withdrawn.

#### **Translation of Japanese References**

The 103 rejections are all based, at least in part on Japanese patents JP 10-255827, JP7-249419, and JP9-223512. Applicants note that no translations of the multiple Japanese documents were provided, and that no translations are available to the Applicants. Applicants further note that, in accordance with MPEP 2141.02, "[a]scertaining the differences between the prior art and the claims at issue requires interpreting the claim as a whole." Indeed, upon review, it is as likely as not that the references may provide teachings that clearly further distinguish them from the claimed invention, or that would preclude their combination as proposed.

Accordingly, Applicants request the Examiner to furnish translations of the above Japanese references so that Applicants can be given a fair opportunity to evaluate them and respond to the rejections. Moreover, Applicants request that the Examiner withdraw the finality of the office action and issue a subsequent non-Final Office Action so as to provide a reasonable opportunity to respond to the rejections.

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**CONCLUSION**

In view of the foregoing, Applicant respectfully submits that the application is in condition for allowance. Favorable reconsideration and prompt allowance of the application are respectfully requested.

Should the Examiner believe that anything further is needed to place the application in even better condition for allowance, the Examiner is requested to contact Applicant's undersigned representative at the telephone number below.

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